

## **IN THE CLAIMS**

This listing of the claim will replace all prior versions and listings of claim in the present application.

### **Listing of Claims**

1. (currently amended) A demodulator of a differential detection system for a  $\pi/4$  shifted Quadrature Phase Shift Keying (QPSK) or Differential Quadrature Phase Shift Keying (DQPSK) modulation wave in digital communication, comprising:

- a plurality of differential detectors each connected to receive an ~~authogonal~~-orthogonal component of said modulation wave;
- a corrector connected to receive outputs of said differential detectors for correcting a deviated distribution of signal points on a constellation; and
- a slicer/decoder connected to receive outputs of said corrector,

wherein said slicer/decoder decodes a received bit from the signal points after the deviated distribution thereof is corrected, and

wherein said corrector has a plurality of average calculators each connected to receive an output of a respective one of the differential detectors and a plurality of subtractors each connected to receive an output of a respective one of the differential detectors and also receive an associated one of outputs of the average calculators for subtracting an average value of the output of the differential detector from the output of the differential detector.

Claim 2 (canceled).

3. (currently amended) The demodulator as set forth in claim 21, wherein said average calculators each include a memory for storing N pieces of output data of said differential detector, an adder for adding together said N pieces of output data read out from the memory, and a multiplier for outputting an output corresponding to  $1/N$  of its input, N being an integer of 2 or more.

4. (currently amended) The demodulator as set forth in claim 21, wherein said average calculators each include a first multiplier for multiplying output data of said differential detector by a constant  $(1-\alpha)$ , a register, a second multiplier for multiplying data from the register by a constant  $\alpha$ , and an adder for adding together outputs of said first and second multipliers and storing the addition outputs which have been added together by the adder in said register, wherein an output of said adder is an average value of the output data of the differential detector and the constant  $\alpha$  is set to satisfy a relationship  $0 < \alpha < 1$ .

5. (currently amended) A demodulation method based on a differential detection system for a  $\pi/4$  shifted Quadrature Phase Signal Keying (QPSK) modulation wave in digital communication, comprising the steps of:

differential detecting said modulation wave by a differential detector;  
correcting a deviated distribution of signal points of said differential-detected modulation wave on a constellation; and

decoding a received bit from the corrected signal points by a slicer/decoder.

wherein said correcting step comprises the steps of:  
calculating an average value of the signal points of said differential-  
detected modulation wave, and  
subtracting said average value from each of the signal points of said  
differential-detected modulation wave,  
wherein said slicer/decoder decodes a received bit from said signal  
points of said modulation wave after the average value is subtracted.

Claim 6 (canceled).